to their national Observatory, and its distinguished and indefatigable director.

AN INTRA-MERCURIAL PLANET (?).—At the sitting of the Paris Academy of Sciences on the 28th ultimo, M. Leverrier announced that he had received a letter from Prof. Rudolf Wolf, of Zurich, in which it was stated that three observers situated in three different places had witnessed, on April 4, the passage of a round spot over the sun's disc. The three localities were—in Germany (near Münster), Greece (Athens), and Switzerland (Zurich). The date is subsequent to the observation of Dr. Lescarbault by 6,219 days, which figure is the product of 148 into 42·02 (printed 40·02 in *L'Institut*, whence this notice is taken), and it may be conjectured that, if the object were a planet, it had made this number of revolutions of 42·02 days.

Such a body would have a mean distance from the sun equal to 0·2365 of the earth's mean distance, with a maximum elongation in a nearly circular orbit of about $13\frac{1}{2}$ degrees, the period of revolution being almost precisely half that of Mercury.

We await details of the observations before examining how far the date 1876, April 4, can be made to agree with similar ones already upon record, supposing all to refer to a single body revolving under the conditions named.

NEW MINOR PLANET.—The *Bulletin International* of the Paris Observatory notifies the discovery of No. 167, by Prof. Peters, at Clinton, U.S., on August 28. R.A. $21^h.\ 57^m.$, N.P.D., 101° 30′, motion south, twelfth magnitude.

NOTES

WE notice, with extreme regret, the announcement of the death of Mr. George Smith, of the British Museum, the accomplished Assyriologist. A telegram received on Monday at the British Museum from Constantinople stated that Mr. Smith died at Aleppo, on the 19th ult., and that further particulars would be ultimately sent. Faint hopes are entertained that the sad announcement will be contradicted. The Turkish Government and officials had thrown so many difficulties in his way that Mr. Smith was on his road home in disgust. It will be remembered that he started in February last on his third archæological expedition to the East. The high value of Mr. Smith's work in a department of research of great importance has been universally acknowledged, and it will be difficult to over-estimate his loss to science and to the British Museum. He has earned an enduring place in the important domain of Eastern archæology.

MR. HOWARD GRUBB, of Dublin, has presented to the Scientific Committee appointed to superintend the work, his Report on the Progress of the Great Equatorial for the Vienna Observatory, the contract for which was concluded in June last year with the Austro-Hungarian Government. The work, we are glad to say, has gone on smoothly and successfully. To enable him to carry on his important undertaking Mr. Grubb has constructed a spacious dodecagon chamber, forty-two feet in internal diameter, the roof of which is so constructed as to allow the great steel dome to be erected over it. Mr. Grubb had contracted with Feil of Paris for the supply of the discs of glass for the great objective, and the flint disc is already in Dublin, where it is now undergoing a rigid examination. The crown disc M. Feil expects to have ready in a few weeks; meanwhile active preparations are being made for the grinding and polishing of the objective. Parts of the general framing have been cast; the polar pillar is completely finished; the polar axis has had most of its parts adjusted. The cross-head and declination axis are completely finished, and the declination circle and adapter nearly so. The clockwork and many of the other parts of the elaborate apparatus necessary for the working of the telescope are also complete, and Mr. Grubb is preparing a travelling gantry across the observatory, and proposes commencing shortly to put together the general ramework and erect the larger portions of the mounting. A communication from Prof. Newcomb has induced Mr. Grubb to take means to obviate the temporary spherical aberration in the objective produced by the difference of temperature outside and inside the tube. Altogether Mr. Grubb is to be congratulated on the progress he is making in his great undertaking. From the *Deutsche Zeitung* we learn that the new observatory itself is making rapid progress towards completion, and may be ready by the beginning of winter, though it will take two or three years to complete the internal arrangements. The telescope, a refractor with a 26-inch objective and 30 feet focal distance, is expected to be ready by the autumn of 1878.

ALGOLOGISTS will be glad to hear that Prof. Agardh of Lund, Sweden, has just published a new volume (vol. iii.) of his work entitled "Species, Genera, et Ordines Algarum." (Epicrisis Systematis Floridearum. Auctore, J. G. Agardh. Lipsiæ: apud T. O. Weigel, 1876.) In it he treats of the Florideæ only; the whole of which, with the exception of the orders *Corallineæ* and *Rhodomeleæ*, are included in it. The Florideæ, it will be remembered, formed the subject of the second volume of "Species Algarum." Since it was published immense numbers of Algæ, in excellent condition, have been submitted to scientific observation; many new species and genera have been added to the list of marine plants; old observations have been verified or corrected; unexpected affinities between plants supposed to be far apart in the system of classification; or discrepancies, equally unexpected, between plants supposed to be closely allied, have been perceived. Improved methods of study have led to the discovery of former errors of classification and description; and the necessity has long been felt by algologists of a work, the arrangement of which should be more in accordance with the present state of knowledge, and in which old errors should be corrected, and new forms described. Such a work Prof. Agardh has now given us, and we are sure it will meet with a welcome reception. The present classification is based on a thorough examination of the internal structure of the frond and of the fruit; and the Professor tells us that no species has been admitted into the text which he had not previously examined. Species, which in the former work had been accurately described, are merely referred to in the present, which must therefore be considered supplementary, and as in no wise superseding the former volume. The present work contains upwards of 700 pages 8vo.

AMONG the questions down for discussion at the Social Science Congress to be held in October, 11th to 18th, at Liverpool, are the following:—In the Education Section—What methods are best adapted to secure the efficient Training of Teachers of all grades, especially in the art of teaching? How can the due connection between Secondary (Grammar) Schools, Elementary Schools, and the Universities, by means of exhibitions, scholarships, or otherwise, be most effectually maintained? How can Professional and Technical Instruction be best incorporated with a sound system of general education? In the Health Section—What is the best mode of making provision for the Supply and Storage of Water—(*a*) in large towns such as Liverpool and Manchester; (*b*) in groups of urban communities of lesser size, such as exist in the manufacturing districts of Lancashire and Yorkshire? What amendments are required in the legislation necessary to prevent the evils arising from Noxious Vapours and Smoke?

AT Pesth, on Monday, the International Prehistoric Congress was opened in presence of the Archduke Joseph, by Herr Trefort, the Minister of Public Instruction, who welcomed the

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guests on behalf of the Hungarian Government. The President of the Congress, Herr Pulszky, then gave an address, in which he enlarged on the prehistoric periods of Hungary. The secretary also read an address treating on the development of prehistoric studies in Hungary, and commenting on the fine collection of prehistoric articles now exhibited. There are over one hundred foreign guests of all nations. Among them are Mr. Franks, of the British Museum; M. Broca, delegated by the French Government; Signor Pigorini, by the Italian Government; and Herr Virchow, of Berlin.

MR. WILLETT has published his fourth and final Report to the British Association on the Sub-Wealden Exploration. After giving a brief history of the enterprise, he states that he resigned the hon. secretaryship on May 1, when Major Beaumont, M.P., chairman of the Diamond Boring Company, offered to take his place and raise funds to continue the work, which had been carried to 1,894 feet. Mr. Willett then says:—"Four months have elapsed. No committee have been summoned. No fresh funds have been raised, and, in my opinion, it is quite time that the whole affair be wound up, and that the exploration be finally abandoned in this locality." His reasons for this conclusion we shall give when his Report comes up at the British Association meeting.

LETTERS received from Baron A. von Hügel announce his arrival in Fiji, where he has already made considerable collections of birds. A full account of his work in New Zealand, with details of his future plans, has unfortunately been lost in transmission to England, but it would appear that he still intends to visit some more of the Pacific Islands, and perhaps New Guinea, before commencing his work in Western Australia. The investigation of the natural history of the latter country was his principal object on leaving England.

THE Iron and Steel Institute commences its autumn meeting at Leeds on the 18th inst.

IT has been observed by M. Jeannel that certain sonorous vibrations cause rotatory movement in the radiometer. In half obscurity, three radiometers were placed on the interior tablet of a chamber organ. The bass notes, those of the three first octaves, produced rotation, the most bass acting most, but *fa* and *fa* sharp of the lower octave (especially with the bourdon stop) produced more rapid rotation than *ut*, *re*, and *mi*, though these are more grave. Radiometers do not all act in the same manner, as to rapidity and direction of their rotation. Thus, to the low *fa* or *fa* sharp radiometer A, the less sensitive to light, made about one turn per second. The black faces first (*i.e.* a direction opposite to that produced by light), whilst radiometers B and C, which were more sensitive to light, turned more slowly and in the direction of the movement produced by light. M. Jeannel explains these effects by circular or angular vibrations of the supporting needle transmitted from the tablet of the organ. By applying the finger to the top of the radiometer, one may prevent the vibration and also the rotation. The board of a piano produces similar effects, but in less degree. If the experiments indicated be made where the diffuse light is nearly sufficient to drive the radiometer, grave sounds, even the weakest, cause rotation in the ordinary direction (bright surfaces first); the rumble of a vehicle will suffice. Here the light is at first insufficient to overcome the friction, but when the vibrations intervene, friction is lessened during certain intervals, and the apparatus is thus rendered more sensitive to light.

M. FRON has given, in the *Bulletin International* of Aug. 12, a short note of the thunderstorms in France on June 9, 1875, on which day they occurred in forty-three departments. The barometric depression accompanying this remarkable development of thunderstorms amounted to 0·630 inch at Valentia, 0·472 inch in Brittany, and 0·276 inch at Paris. An illustration is given showing that the barometer fell to its lowest point at Paris at the time the thunderstorm broke over the city, and that at the same time in the centre of this depression the barometer suddenly rose and as suddenly fell through about 0·033 inch, the whole of this brief-continued oscillation occupying less than an hour. It would be a valuable piece of work if the French meteorologists could, from an examination of the changes in the direction and force of the wind, the aqueous precipitation, the electrical and other meteorological phenomena which occurred at the time, trace this singular barometric fluctuation to its physical causes.

THE number of visitors to the Loan Collection of Scientific Apparatus during the week ending Sept. 2 was as follows:—Monday, 3,200; Tuesday, 2,977; Wednesday, 468; Thursday, 355; Friday, 332; Saturday, 3,925; total, 11,257.

À propos of the meeting of the British Association, *Science Gossip* for September contains an interesting article on the Geology of Glasgow and the neighbourhood, by Mr. R. L. Jack, F.G.S., of the Geological Survey.

THE first number of *The Mineralogical Magazine and Journal of the Mineralogical Society of Great Britain and Ireland* has just been issued. It contains eight papers on subjects of mineralogical interest. Lake and Lake of Truro are the publishers.

THE General Meteorological Council of the Gironde have passed a resolution asking the French Government to establish the Meteorological Service on the basis adopted in the United States; other general councils will do the same, and the result will very likely be an increase in the sums voted for the meteorological service.

M. WADDINGTON has published a circular organising an improved system for obtaining school statistics in France. The number of pupils admitted into primary schools has been, up to the present time, determined merely by the names of children inscribed on the school register, though the attendance of many is merely nominal. The roll will be called henceforth twice a-day, morning and afternoon, so that the real state of things may be known, and no compliment paid to national pride.

THE Municipal Council of Perpignan voted, at its last sitting, a sum of 15,000 francs for the purpose of erecting a statue to François Arago, who was born in the department of Pyrenées Orientales, of which Perpignan is the chief town. His native place was Estagel, a small village, where a monument has already been erected to him.

THE City of Grenoble inaugurated, on August 14, a statue in honour of Vaulanson, a celebrated mechanician born there in the beginning of the eighteenth century.

THE programmes for admission to the newly-created French National School of Agriculture have been officially published. The examination will take place very shortly, and the first promotions will be announced in the beginning of next year. The ex-imperial Vincennes farm has been devoted to the new establishment, which, besides those who have passed examinations, will admit a number of pupils free. No charge will be made for education.

AFTER repeated efforts an agricultural experimental station in Connecticut was successfully established, under the charge of the trustees of the Wesleyan University. The preliminary report of less than half a year's labours has just been published, and shows the enterprise to have been a legitimate one in view of the amount and character of the work accomplished. The establishment is in charge of Prof. W. O. Atwater, an agricultural chemist of eminence, under whose direction a considerable number of analyses of fertilisers have been made. The result of the labours of this experimental station has already been to define with precision the percentage of nitrogen to the ton in the

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various fertilisers offered for sale, and the withdrawal from the market of several worthless articles.

M. DURUOF the aëronaut made an ascent at Cherbourg on the occasion of a recent launch. He ascended to 12,000 feet, and came down in the bay at twenty miles from Cherbourg. A number of steamers had been sent out to help if needed, and M. Duruof was taken on board one of them unhurt. The manœuvre was most cleverly executed with the help of an apparatus which M. Duruof had immersed in the sea to diminish the velocity of the balloon, and permit the boat to board the car.

A CORRESPONDENT, writing from Waterloo, near Liverpool, asks if there are any works published on the Æolian Drift or Wind Driftage, its cause and cure.

THE Institution of Civil Engineers has published its list of subjects for papers and prizes for session 1876-77. A copy may be obtained by applying at 25, Great George Street, Westminster, S.W.

THE third number of the *Bothkamper Beobachtungen*, recently published, contains exclusively M. Lohse's researches in the years 1872 and 1873. The volume is in three parts:—1. Researches on the physical nature of the sun's surface. 2. Photographic registration of the sun-spots. 3. Meteorological observations in the year 1873. The promised fourth volume will contain M. Vogel's researches during the same period.

WE have received the second part of the second volume of the "Proceedings of the Natural History Society of Glasgow," which contains numerous papers by Prof. John Young, Messrs. Harvie Brown, James Lumsden, Robert Gray, D. Robertson, P. Cameron, jun., and others. The most important of the communications are ornithological and entomological; some are peculiarly briefly noticed.

SOCIETIES AND ACADEMIES

LONDON

Entomological Society, Aug. 2.—Sir Sidney Smith Saunders, vice-presdent, in the chair.—Messrs. Harold Swale and T. S. Hillman were elected ordinary members.—Mr. Stevens exhibited *Tillus unifasciatus* and *Xylotrogus brunneus* taken on an oak-fence at Upper Norwood; and Mr. Champion exhibited *Harpulus 4-punctatus*, *Dendrophagus crenatus*, and other rare Coleoptera from Aviemore, Inverness-shire.—Mr. Forbes exhibited a specimen of *Quedius dilatatus* taken by him with sugar in the New Forest.—From a despatch from H. M. Chargé d'Affaires at Madrid, a copy of which was forwarded to the secretary through the Foreign Office, it appeared that the damage done this year by the locusts was considerably less than that of last year, owing to the number of soldiers which the Government had been able to employ since the war was over, in assisting the inhabitants of the districts where the plague existed, in destroying the insects. Specimens of the locust, as well as a number of earthen tubes containing the eggs, were forwarded to the society, and on examination they were found to be the *Locusta albifrons*, Fab. (*Decticus albifrons*, Savigny).—Mr. M'Lachlan exhibited a series of thirteen examples of a dragon-fly (*Diplax meridionalis*, Selys), recently taken by him in the Alpes Dauphinés, remarkable for the extent to which they were infested by the red parasite described by De Geer as *Acarus libellulæ*. They were firmly fixed on the nervures at the base of the wing, almost invariably on the underside, and being arranged nearly symmetrically, had a very pretty appearance, the wings looking as if they were spotted with blood-red. He considered that the *Acari* must have attained their position by climbing up the legs of the dragon-fly when at rest—Mr. F. Smith read a note on *Nematus gallicola*, Steph., the Gall-maker, so common on the leaves of species of *Salix*, but of which the male had, apparently, not previously been observed. From 500 or 600 galls collected by him in 1875, he had obtained a multitude of females, but only *two* males; and he thought that by perseverance in this way it would be possible to obtain the males of this and other allied species, of which the males were practically unknown, the female being capable of continuing the species without immediate male influence; and he argued from this that the long-sought males of *Cynips* might some day be found by collecting the galls early in the year. He expressed his belief that Mr. Walsh had proved, beyond question, the breeding of a male *Cynips* in America, although the precise generic rank of the supposed *Cynips* was disputed by some of the members present.—The president (Prof. Westwood), who was unable to be at the meeting, forwarded some notes of the habits of a Lepidopterous insect, parasitic on *Fulgora candelaria*, by J. C. Bowring, with a description of the species and drawings of the insect in its different stages, by himself. It appeared that the Coccus-like larvæ were found attached to the dorsal surface of the *Fulgora*, feeding upon the waxy secretion of the latter, and covering itself with a cottony substance. From its general appearance the Professor was disposed to place the insect among the *Arctiidæ*. It was discovered many years ago by Mr. Bowring, and he (Mr. Westwood) had noticed it at the meeting of the British Association at Oxford, in 1860, under the name of *Epipyrops anomala*.—The Rev. R. P. Murray forwarded a paper by Mr. W. H. Miskin, of Brisbane, containing descriptions of new species of Australian Diurnal Lepidoptera in his own collection.—Mr. Edward Saunders communicated the third and concluding portion of his synopsis of British Hemiptera-Heteroptera.

VIENNA

Imperial Academy of Sciences, June 16.—The following, among other papers, were read:—On an earthquake in Canea, Crete, on April 25, by M. Micksche. The waves of impulse came from the north. The sea was quiet, and there was no sound. The last earthquake was in January last year, and was more violent.—Communications from the laboratory of Prague University, by M. Linnemann. These relate to reactions with propylene.—On a gas battery of convenient form, by M. Mach. It consists of sixteen jars connected in pairs, by their like coatings. By a simple commutator the pairs can be connected together to an ordinary jar battery, or successively to a Franklin jar battery, and this combination can be quickly changed. Long and powerful sparks are had (16 ctm. *e.g.*).—Body-measurements of various peoples, made during the Austro-Hungarian expedition to Eastern Asia, by Dr. Janka, and extended, by personal observations, by Dr. Weisbach. Dr. Weisbach distinguishes—I. Short heads; II. Medium heads; III. Long heads. Each of these divisions fall into *a*, prognathous, and *b*, orthognathous, and each of these sub-divisions into 1, Long-armed; 2, Equal-limbed; 3, Short-armed. In this system the short-headed prognathous human races, whose arms are longer than the legs, stand lowest, *i.e.*, nearest to the apes; and the long-headed orthognathous and short-armed, stand highest.—A contribution to knowledge of Mediterranean fauna, by M. Hörnes.—On a constant winding in the human brain, observed by M. Heschl.—On the development-history of the ganglia, and the *Lobus electricus*, by M. Schenk.

June 22.—On an earthquake in Canea, Crete, on May 23, by M. Micksche. The disturbance may have come from Cyprus or Syria, or may be an awakening of the old volcanic action of Crete itself.—On the occurrence of the foraminiferal species, *Nubecularia*, in the Sarmatian sand of Kischenew, in Bessarabia, by MM. Karrer and Sinzow.

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